REMARKS

Claims 1-8, 30, 32, 33, and 35-62 are pending in the present application.

ARGUMENTS WITH RESPECT TO THE REJECTION OF CLAIMS 1-4, 23, 30-34 & 39

Claims 1-4, 23, 30-34, and 39 have been rejected under 35 U.S.C. §102(b) as being anticipated by Mihara et al. (US-A-5,561,307). This rejection under 35 U.S.C. §102(b) to claims 1-4, 23, 30-34, and 39, and it may be applied to newly added claims 40-62, is respectfully traversed.

One embodiment of the present invention is directed to a metallization stack in an integrated MEMS device. As set forth in amended independent claim 1, the metallization stack includes a substrate having an electrically conductive structure; a field oxide, having a contact hole therein, formed over the substrate; a silicide layer formed in the contact hole of the field oxide; a titanium-tungsten layer, formed directly on said silicide layer, to operatively contact the electrically conductive structure in the substrate; and a platinum layer. The platinum layer haa a first portion formed directly on the titanium-tungsten layer and a second portion formed directly on the field oxide. The silicide layer, titanium-tungsten layer, and platinum layer, together, form an electrical connection to the electrically conductive structure.

Another embodiment of the present invention is directed to a metallization stack in an integrated MEMS device. As set forth in amended independent claim 32, the metallization stack includes a substrate having an electrically conductive structure; a field oxide, having a contact hole therein, formed over the substrate; a silicide layer formed in the contact hole of the field oxide; a titanium-tungsten layer, formed directly on said silicide layer, to operatively contact the electrically conductive structure in the substrate; and a platinum layer. The platinum layer haa a first portion formed directly on the titanium-tungsten layer and a second portion formed directly on the field oxide.

A further embodiment of the present invention is directed to an integrated MEMS device. The integrated MEMS device, as set forth by newly added independent claim 40, includes a

substrate having a first electrically conductive structure and a second electrically conductive structure; a field oxide, having a first contact hole therein and a second contact hole therein, the field oxide being formed over the substrate; a first silicide layer formed in the first contact hole of the field oxide; a second silicide layer formed in the second contact hole of the field oxide; a first titanium-tungsten layer, formed over the first silicide layer, to operatively contact the first electrically conductive structure in the substrate; a second titanium-tungsten layer, formed over the second silicide layer, to operatively contact the second electrically conductive structure in the substrate; and a continuous platinum layer. The continuous platinum layer is formed over the first and second titanium-tungsten layers.

Another embodiment of the present invention is directed to an integrated MEMS device. The integrated MEMS device, as set forth by newly added independent claim 46, includes a substrate having a first electrically conductive structure and a second electrically conductive structure; a field oxide, having a first contact hole therein and a second contact hole therein, the field oxide being formed over the substrate; a first silicide layer formed in the first contact hole of the field oxide; a second silicide layer formed in the second contact hole of the field oxide; a continuous titanium-tungsten layer, formed over the first silicide layer and the second silicide layer, to operatively contact the first and second electrically conductive structures in the substrate; and a continuous platinum layer. The continuous platinum layer is formed over the continuous titanium-tungsten layer.

A further embodiment of the present invention is directed to an integrated MEMS device. The integrated MEMS device, as set forth by newly added independent claim 52, includes a substrate having a plurality of electrically conductive structures; a field oxide, having a plurality of contact holes therein, each electrically conductive structure having a contact hole associated therewith; the field oxide being formed over the substrate; a plurality of silicide layers, each contact hole having a silicide layer associated therewith and formed therein; a plurality of titanium-tungsten layers, each silicide layer having a titanium-tungsten layer associated therewith and formed thereover; and a continuous platinum layer. The continuous platinum layer is formed over the plurality of titanium-tungsten layers.

A further embodiment of the present invention is directed to an integrated MEMS device. The integrated MEMS device, as set forth by newly added independent claim 56, includes a

substrate having a plurality of electrically conductive structures; a field oxide, having a plurality of contact holes therein, each electrically conductive structure having a contact hole associated therewith; the field oxide being formed over the substrate; a plurality of silicide layers, each contact hole having a silicide layer associated therewith and formed therein; a continuous titanium-tungsten layer formed over the plurality of silicide layers; and a continuous platinum layer. The continuous platinum layer is formed over the continuous titanium-tungsten layer.

In presenting the present rejection under 35 U.S.C. §102(b), the Examiner argues that Mihara et al. discloses a metallization stack formed of layers of silicide, titanium-tungsten, and platinum located within a contact hole formed in a field oxide layer overlaying a substrate. From these allegations, the Examiner concludes that Mihara et al. anticipates the presently claimed invention.

To establish anticipation, each and every limitation of the claimed subject matter must be taught in the relied upon reference. As noted by the Examiner, Mihara et al. discloses a metallization stack formed of layers of silicide, titanium-tungsten, and platinum located within a contact hole formed in a field oxide layer overlaying a substrate. Moreover, Mihara et al. discloses that the platinum layer is formed directly on the titanium-tungsten layer and no more.

In contrast, the presently claimed invention, as set forth in amended independent claims 1 and 32, explicitly sets forth that the platinum layer has a first portion and a second portion. As recited in the claims, the first portion is formed directly on the titanium-tungsten layer and the second portion is formed directly on the field oxide. Mihara et al. fails to teach or disclose that a platinum layer having a first portion and a second portion wherein the first portion is formed directly on the titanium-tungsten layer and the second portion is formed directly on the field oxide.

Furthermore, as recited in newly added claim 40, the presently claimed invention includes a continuous platinum layer that is formed over the first and second titanium-tungsten layers that have been formed over first and second silicide layers, the silicide layers being formed in the contact holes. Mihara et al. fails to teach or disclose that a continuous platinum layer is formed over the first and second titanium-tungsten layers that have been formed over first and second silicide layers, the silicide layers being formed in the contact holes.

Moreover, as recited in newly added claim 46, the presently claimed invention includes a continuous platinum layer that is formed over the continuous titanium-tungsten layer that has been formed over first and second silicide layers, the silicide layers being formed in the contact holes. Mihara et al. fails to teach or disclose that a continuous platinum layer is formed over the continuous titanium-tungsten layer that has been formed over first and second silicide layers, the silicide layers being formed in the contact holes.

Also, as recited in newly added claim 52, the presently claimed invention includes a continuous platinum layer is formed over the plurality of titanium-tungsten layers that have been formed over the plurality of silicide layers, the silicide layers being formed in the contact holes. Mihara et al. fails to teach or disclose that a continuous platinum layer is formed over the plurality of titanium-tungsten layers that have been formed over the plurality of silicide layers, the silicide layers being formed in the contact holes.

Lastly, as recited in newly added claim 56, the presently claimed invention includes a continuous platinum layer that is formed over the continuous titanium-tungsten layer that has been formed over the plurality of silicide layers, the silicide layers being formed in the contact holes. Mihara et al. fails to teach or disclose that a continuous platinum layer is formed over the continuous titanium-tungsten layer that has been formed over the plurality of silicide layers, the silicide layers being formed in the contact holes.

In summary, Mihara et al. fails to teach or disclose:

(1) a platinum layer having a first portion and a second portion wherein the first portion is formed directly on the titanium-tungsten layer and the second portion is formed directly on the field oxide;

(2) a continuous platinum layer is formed over the first and second titanium-tungsten layers that have been formed over first and second silicide layers, the silicide layers being formed in the contact holes;

(3) a continuous platinum layer is formed over the continuous titanium-tungsten layer that has been formed over first and second silicide layers, the silicide layers being formed in the contact holes;

(4) a continuous platinum layer is formed over the plurality of titanium-tungsten layers that have been formed over the plurality of silicide layers, the silicide layers being formed in the contact holes; or

(5) a continuous platinum layer is formed over the continuous titanium-tungsten layer that has been formed over the plurality of silicide layers, the silicide layers being formed in the contact holes.

Therefore, Mihara et al. cannot anticipate the presently claimed invention as set forth in independent claims 1, 32, 40, 46, 52, and 56.

With respect to dependent claims 2-4, 34, and 39, 42-45, 47-51, 53-55, and 57-59, the Applicants, for the sake of brevity, will not address the reasons supporting patentability for these individual dependent claims, as these claims depend directly or indirectly from allowable independent claims 1, 32, 40, 46, 52, and 56. The Applicants reserve the right to address the patentability of these dependent claims at a later time, should it be necessary.

Accordingly, in view of the above amendments and remarks, the Examiner is respectfully requested to reconsider and withdraw this rejection.

ARGUMENTS WITH RESPECT TO THE REJECTION OF CLAIMS 5-8, 24 & 35-38

Claims 5-8, 24, and 35-38 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Mihara et al. (US-A-5,561,307). This rejection under 35 U.S.C. §103(a) over Mihara et al. is respectfully traversed.

With respect to dependent claims 5-8, 35-38, 42-45, 47-51, 53-55, and 57-59, the Applicants, for the sake of brevity, will not address the reasons supporting patentability for these individual dependent claims, as these claims depend directly or indirectly from allowable independent claims 1, 32, 40, 46, 52, and 56. The Applicants reserve the right to address the patentability of these dependent claims at a later time, should it be necessary.

Accordingly, in view of the remarks set forth above, the Examiner is respectfully requested to reconsider and withdraw this rejection under 35 U.S.C. §103(a).

CONCLUSION

Accordingly, in view of the remarks set forth above, the Examiner is respectfully requested to reconsider and withdraw all the present rejections. Also, an early indication of allowability is earnestly solicited.

Respectfully submitted,

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